

November 14, 2003

Barry S. Drucker  
Minerals Management Service  
381 Elden Street, MS 4030  
Herndon, VA 20170-4817

Dear Mr. Drucker:

This letter is the eleventh Bi-Monthly Status Letter for Cooperative Agreement Number 1435-01-02-CA-85050, *Field Testing of a Physical/Biological Monitoring Methodology for Offshore Dredging and Mining Operations*.

**Task 1:** Biology: Robert Diaz and Janet Nestlerode report that animals collected in the August 2003 post-dredge benthic samples are currently being processed. Post-dredge video surveys have not been completed thus far due to poor near-bottom visibility at the site and limited vessel availability due to recovery efforts from Hurricane Isabel. Descriptive analysis of the video from the 2002 pre-dredge survey is complete and final statistical analyses of these data are underway.

**Task 2:** Shoreline and Beach Studies: Scott Hardaway and Donna Milligan submitted the following status update.

The ATV that we use for the alongshore beach surveying has been out of commission for several months as a result we have not been able to acquire a post-storm survey at Sandbridge. We do have access to cross-shore surveys taken by Waterway Surveying and Engineering every 500 feet at Sandbridge. We have finished processing the shorelines all of the raw profile data we have taken. We also have developed the methodology for analyzing those shorelines. The mean high water contour for each date is imported to ArcView. A baseline is drawn landward of the shorelines and an Avenue script developed for another project is utilized to determine the distance from the baseline to the shoreline along user-determined transects (Figure 1). These data are exported to an excel spreadsheet, and rates of change are determined.

We also have been looking at the long-term morphological evolution of the coast between Cape Henry and the North Carolina border. Figure 2 shows ortho-rectified historical photo mosaics for a section of the ocean coast in 1937, 1970, and 1994. Rudee Inlet is recognizable in the center of the later photos. The 2002 will also be added, the shorelines digitized, and rates of long-term change determined.

Barry S. Drucker  
Minerals Management Service  
381 Elden Street, MS 4030  
Herndon, VA 20170-4817

**Task 3:** Bottom Imagery and Bathymetry: Jesse McNinch reports that analyses of side scan sonar and chirp sub-bottom profiles continue. Correlation of framework geology (location of buried river channels) with recent shoreline erosion is in progress. Shoreline erosion associated with hurricane Isabel will be analyzed with respect to the location of the previously mapped framework geology.

**Task 4:** Wave Studies: Jerome Maa reports that he has successfully collected radar images using the high speed A/D interface card purchased from Gage Applications. Figure 3 is a sample image. In this radar image, the VIMS pier and the fishing pier at Yorktown can be clearly seen. Currently, he is working to refine image collection. The Furuno 8251 marine radar sends out about 1750 burst lines within 0.8 seconds for a half circle radar image. This represents a size of 1 GB for one image. For our wave analysis purposes, this is more data than is needed, especially at the very early stage for one single wave height measurement. Therefore he is working to reduce the data-set size for a faster data processing. Dr. Maa expects this process can be done before the end of this year.

His next step is to explore the possibility of installing the radar on top of a hotel roof at Virginia Beach. This will give more time to determine where to setup the observation tower in Sand Bridge.

He continues working on image analysis using artificially generated images.

**Task 5:** Project Management. This has been a difficult period. Hurricane Isabel did significant damage on the VIMS campus and closed campus for nearly a week. The Department of Physical Sciences, which is home to all of us except Diaz and Nestlerode, suffered more damage than any other academic/research department with the consequence that a substantial time and labor has gone into the recovery effort draining our ability to make progress on other responsibilities. Although the acute problems have been resolved and many things are back to normal, it will be many months until recovery is complete, damaged or destroyed equipment is repaired or replaced, and some staff can return to permanent quarters.

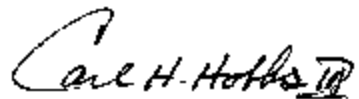
In October I attended the MMS Workshop on Sand Resources in Newark, Delaware. Although my presentation concentrated on work performed under Cooperative Agreement No. 1435-01-98-CA-30934, *Continuing Studies on Southeastern Virginia's Inner Continental Shelf Including Studies Related to Beach Nourishment*, that project and the current monitoring methodology project are so intertwined that I strongly acknowledged MMS for funding both. The Delaware Geological Survey has posted the PowerPoint presentations as .pdf files at <http://www.udel.edu/dgs/ftp/offshore/>.

Barry S. Drucker  
Minerals Management Service  
381 Elden Street, MS 4030  
Herndon, VA 20170-4817

Finally, the last figure is the image that you requested earlier this fall depicting the Sandbridge Shoal dredge area within a photograph of the shoreline. Donna Milligan relates that the image was done in Arcview. The base photo is a 1994 digital orthorectified quarter quadrangle (DOQQ). The dredging map is proportionally correct and in the correct spot. The state plane coordinates (of the dredge area) had to be converted to UTM in order to overlay on the DOQQ. The May shoreline was surveyed with the pug. It is about mid-fill.

As always, should you have any question, please do not hesitate to contact any of us.

Respectfully submitted,

A handwritten signature in black ink that reads "Carl H. Hobbs, III". The signature is written in a cursive style with a large initial "C" and a stylized "H".

Carl H. Hobbs, III  
Associate Professor and Project Manager

Copy: MMS: J. Kendall, W. Adcox, J. Rowland, R. Amato  
VIMS: R. Diaz, J. Nestlerode, J. McNinch, S. Hardaway, D. Milligan, J. Maa, C. Harris, M.  
Fonner

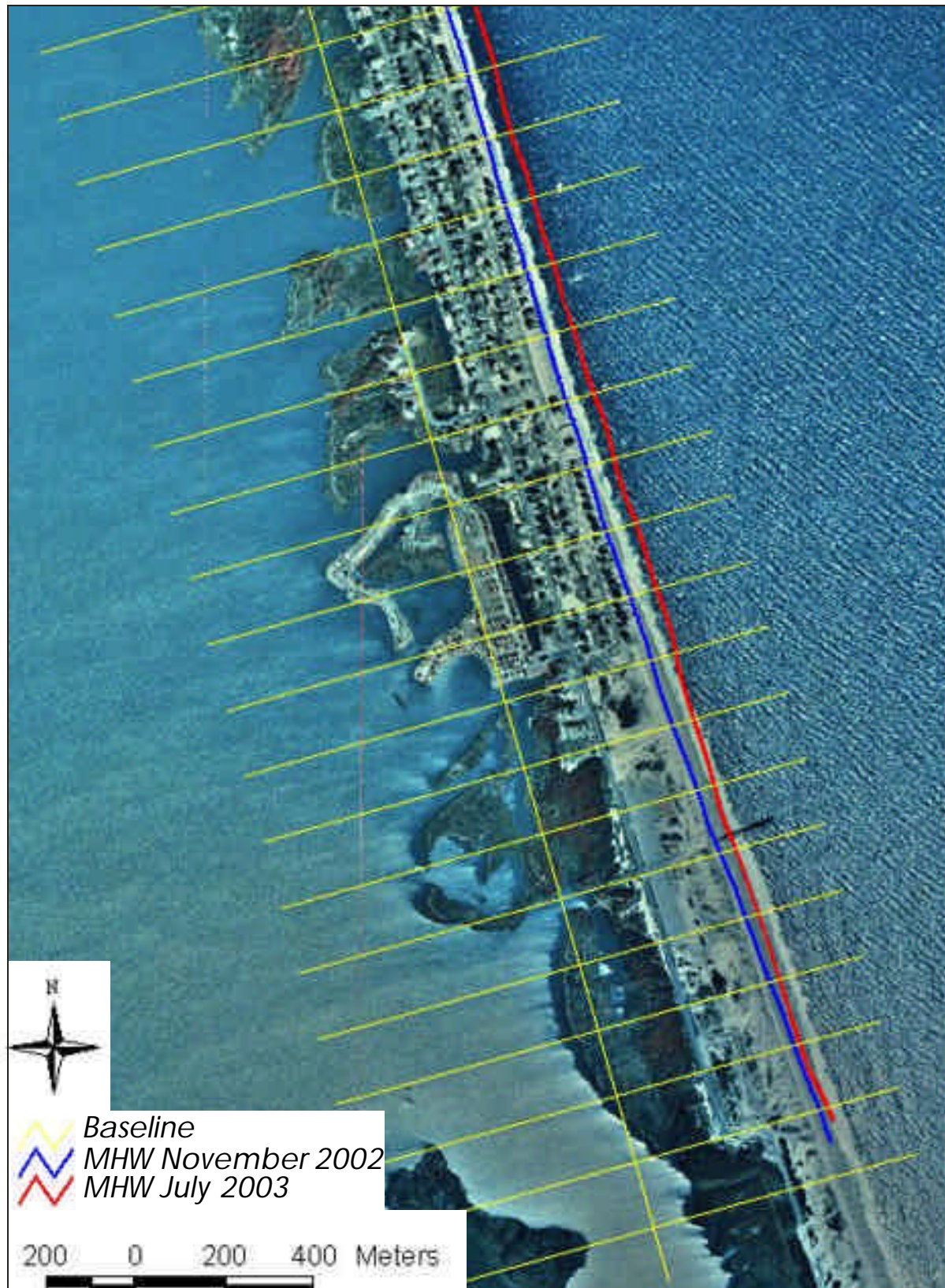


Figure 1: Aerial photograph of part of the Sandbridge study area with November 2002 and July 2003 mean-high-water shorelines superimposed along with a baseline and transects used for measurement of shoreline movement.

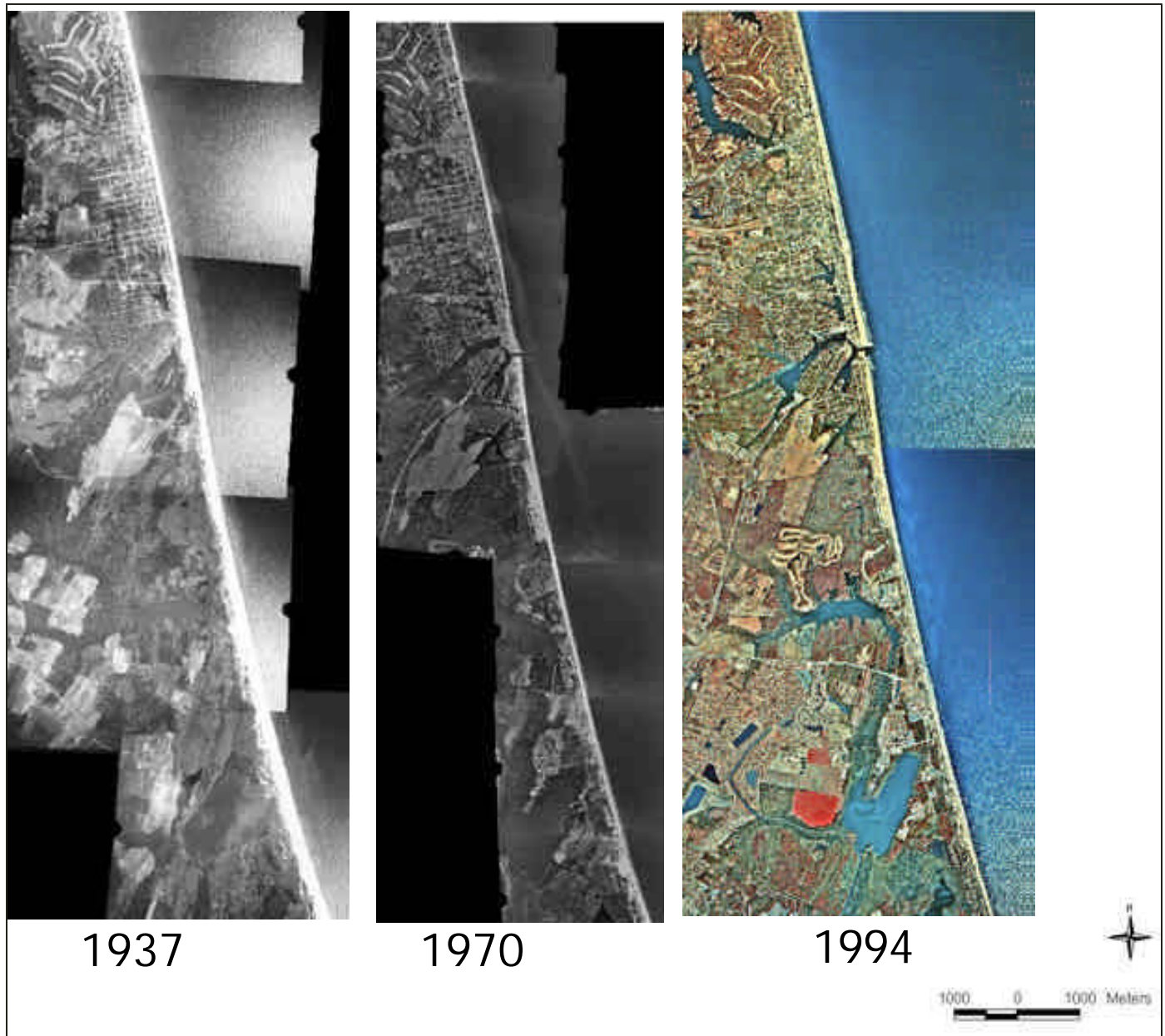


Figure 2: Ortho-rectified, photo mosaics from 1937, 1970, and 1994 for a portion of the Atlantic coast of southeastern Virginia. Rudee Inlet is clearly discernable about a third of the way down from the top in the 1970 and 1994 images.

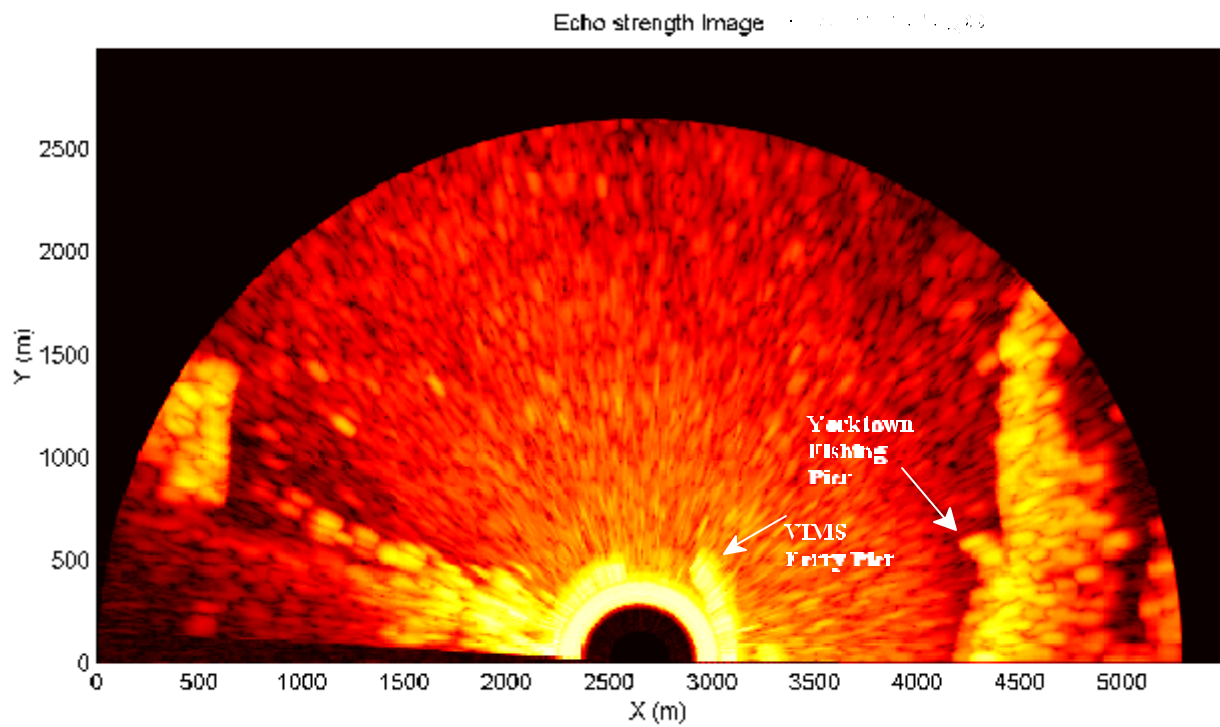


Figure 3: Radar image collected from the Furuno marine radar mounted atop Byrd Hall on the VIMS campus.



1000 0 1000 2000 Meters



Photo Base 1994 DOQQ  
Red Shoreline, May 2003 by  
VIMS Shoreline Studies Program  
Offshore Dredging Data May 2003 by  
Waterway Surveys & Engineering, Ltd  
Weeks Marine

